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Shoulder deformation without neurological injuries: A rare visible sequela after positional torture

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Abstract
Introduction: Positional torture - commonly involving forced immobilisation in extreme or contorted postures - is known to produce musculoskeletal and neurological harm while often leaving minimal visible evidence. Although chronic pain and functional impairments are well documented, overt structural deformities of the shoulder region in the absence of neurological symptoms are exceptionally rare. *Case presentation:* We describe a 23-year-old male survivor of torture who developed bilateral acromioclavicular deformities following prolonged immobilisation with his arms bound in forced hyperextension for 10–12 hours per day over a 15-day period. Two years after the events, physical examination revealed symmetrical swelling over the acromioclavicular joints, preserved range of motion, full muscle strength, and intact sensory function. Magnetic resonance imaging demonstrated marked thickening of the fibrous subcutaneous tissues without involvement of deeper musculoskeletal structures or the brachial plexus. *Discussion:* This presentation differs from the shoulder sequelae most frequently reported in torture survivors - such as impingement syndrome, tendinopathy, and adhesive capsulitis - which typically manifest with pain rather than visible deformity. Current anatomical studies of suspension-related torture mechanisms suggest that sustained hyperextension may precipitate soft-tissue remodelling and fibrofatty proliferation in the absence of persistent neuropathy, which is consistent with our findings. This case broadens the recognised spectrum of physical outcomes associated with positional torture by demonstrating that visible, bilateral shoulder deformities can occur without neurological deficit or pain. The findings highlight the critical importance of meticulous inspection and targeted palpation in the medico-legal examination of torture survivors, even when symptoms appear minimal or absent.

Keywords: positional torture, stress positions, shoulder deformity, medico-legal evaluation, musculoskeletal sequelae

Positional torture, also referred to as "stress positions," involves forcing a victim to maintain a fixed, often contorted posture for extended periods ranging from minutes to several hours or days (Rejali**,** 2007). These positions may include standing on the toes, holding the arms outstretched, or remaining bound in hyperextended postures. Victims endure these positions either due to fear of punishment or because they are physically restrained using ropes, straps, or handcuffs (DIGNITY, 2025). According to the Istanbul Protocol, positional torture typically leaves little to no visible evidence, despite the potential for chronic pain

and disability (Office of the United Nations High Commissioner for Human Rights, 2022).

A growing body of work shows that musculoskeletal sequelae of torture and suspension are common even when neurological damage is absent. In a case-series from the Human Rights Foundation of Turkey, 18 torture survivors presenting with shoulder pain were found to have mainly non-neurological pathologies: impingement syndrome (61.1%), supraspinatus tendinitis and bursitis (27.8%), frozen shoulder (11.1%), whereas only two patients (11.1%) had brachial plexus injury (Human Rights Foundation of Turkey, 2025). A narrative review of suspension torture described a wide spectrum of shoulder-girdle injuries (including brachial plexus neuropathies, joint dislocation, capsular and ligamentous damage, scarring) while emphasising that persistent pain and dysfunction may occur without conspicuous external marks (Woldu & Brasholt, 2021). Recent anatomical work on "reverse hanging" has further clarified that hyperextension concentrates mechanical stress on the glenohumeral capsule, periarticular soft tissues, and brachial plexus; depending on the magnitude and duration of loading, these structures may sustain soft-tissue injury and transient neuropathy, even in the absence of lasting neurological deficits (Pollanen & Ng, 2025). Shoulder pain and deformity following torture should therefore be understood in the broader context of chronic musculoskeletal pain in survivors. Large clinical cohorts and reviews have shown that persistent pain, including shoulder girdle pain and dysfunction, is highly prevalent among torture survivors and cannot be reduced to a mere somatic expression of psychological distress (Williams & Amris, 2017).

However, visible structural deformities of the shoulder region are rarely documented. Here, we report a rare case of a visible physical sequela following positional torture, in the absence of neurological impairment or chronic pain.

A 23-year-old male from Bangladesh was evaluated at the "Treatment and Rehabilitation of Victims of Torture" service at the University of Palermo, in collaboration with Médecins Sans Frontières. The patient reported being detained in Libya, where he was subjected to multiple forms of physical and psychological torture two years prior to presentation. He specifically described episodes of cigarette burns, beatings with sticks and electrical cables, and prolonged immobilisation in a stress position. He refers to having been bound to a pole with his arms hyperextended behind his back for approximately 10 to 12 hours/day for 15 days. The patient denies ever having engaged in heavy labour, specifically denying ever having carried loads on his shoulders.

On physical examination, multiple cigarette-burn scars were observed over the dorsal thoracic region, along with cicatricial lesions consistent with blunt trauma and flagellation. Notably, bilateral deformities of the shoulders were evident, characterised by localised swelling over both acromioclavicular joints (Fig. 1a, 1b, 2a, 2b) and dyschromia/bruising of the overlying skin (Fig. 3a, 3b). Palpation elicited a mild nociceptive response in these areas. An orthopaedic examination revealed a full range of motion in both shoulders, with no restrictions. Neurological evaluation showed preserved muscle strength and normal sensory function. The patient denied paraesthesia, motor weakness, or any limitation in daily activities. Magnetic resonance imaging shows subcutaneous tissues with marked thickening of the fibrous supporting component and skin relief (Fig. 4a, 4b, 4c).

This case underscores the variability in the clinical sequelae of positional torture. In the HRFT case-series, shoulder pain in torture survivors was most commonly attributed to impingement syndrome, supraspinatus tendinitis, and frozen shoulder, with only a minority of patients showing evidence of brachial plexus injury (Human Rights Foundation of Turkey, 2025). Our patient differs from those cases in that he did not complain of persistent pain or functional restriction, yet presented with a bilateral, palpable deformity over the acromioclavicular region. This finding suggests that positional torture may occasionally produce structural changes that are clinically evident on inspection and palpation, even when the survivor does not report pain as a primary symptom. The present observations can also be contrasted with the case reported by Braham and colleagues, in which a detainee was found to have a bilateral acromioclavicular dislocation with a characteristic "piano-key" deformity of the distal clavicles (Braham, 2017). In that case, a detailed comparative examination and radiologic assessment led the authors to conclude that the bilateral acromioclavicular dislocation was chronic and unlikely to be attributable to recent torture. In our patient, by contrast, the shoulder deformities arose in temporal association with prolonged immobilisation in an extreme stress position and were supported by imaging showing thickening of the fibrous subcutaneous tissues rather than joint dislocation. Additionally, the cutaneous dyschromia observed is likely attributable to prolonged skin traction in an abnormal position (Sanjeewa & Vidanapathirana, 2017). Together, these reports highlight that visible deformities of the shoulder girdle in detainees may arise from both longstanding, unrelated orthopaedic conditions and torture-related soft-tissue changes; careful clinical and radiological evaluation is required to distinguish between these possibilities (Albano et al.,2025).

Figure 1. *1a, 1b Bilateral deformities of the shoulders were evident, characterised by localised swelling over both acromioclavicular joints*

Figure 2*. 2a, 2b Bilateral deformities of the shoulders were evident, characterised by localised swelling over both acromioclavicular joints*

***Figure 3**. 3a, 3b. Dyschromia/bruising of the skin overlying the localised swelling.*

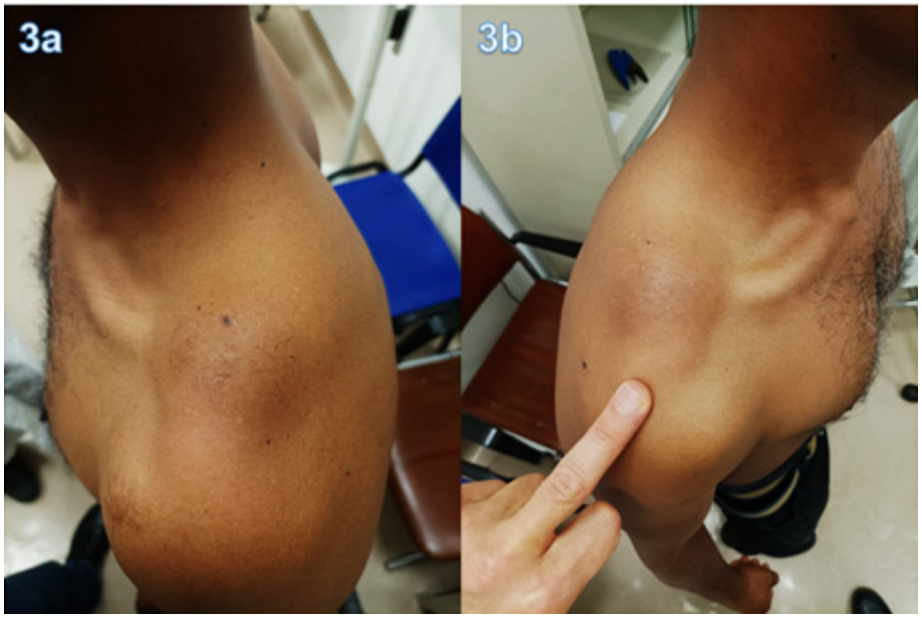
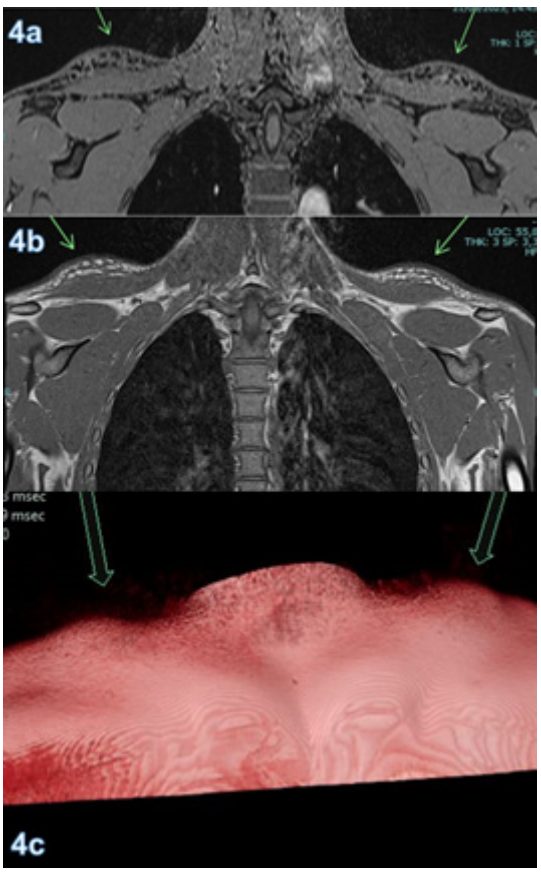


***Figure 4**. 4a. T1 in the coronal plane shows, bilaterally, subcutaneous tissues of the intermediate and medial clavicular region, apico-dorsally with marked thickening of the fibrous supporting component and skin relief (maximum thickness of about 2.5 mm). 4b. T1 in the coronal plane shows, dorsally and bilaterally, subcutaneous tissues in the clavicular region with fibrotic changes possibly related to a fascial inflammatory event. 4c. VR3D reconstructions show marked thickening of the fibrous supporting component and skin relief.*



Determining the consistency between old injuries and a survivor's narrative can be difficult - and at times impossible. Nonetheless, clinicians and forensic experts in particular should strive to provide a reasoned appraisal of the available evidence, as such evaluations have been shown to significantly influence judicial outcomes. This report presents an unusual but clinically significant physical indicator of positional torture, which may otherwise be overlooked in the absence of neurological findings. It also underscores the importance of comprehensive physical examination in the clinical and medico-legal assessment of torture survivors.

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Conflict of interest

None declared.

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